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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/395,909	09/14/1999	ANDERS UVLIDEN	44559-00003	6655

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EXAMINER	
ARMSTRONG, ANGELA A	
ART UNIT	**PAPER NUMBER**
2654	12

DATE MAILED: 04/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/395,909	UVLIDEN ET AL.	
	Examiner	Art Unit	
	Angela A. Armstrong	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 29, 2003 has been entered.

Claim Rejections – 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-3, and 6-15, 17-20, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deller et al (1987, Discrete-Time Processing of Speech Signals) in view of McCree (US Patent No. 6,122,608) and further in view of Ubale et al (US Patent No. 5,778,335).

4. Regarding claims 1-3, 8-9, 12-14, 17-19, and 22, at pages 480-482, Deller et al discloses the basic principles of the Code-excited linear prediction (CELP) coding method, which is based on an analysis by synthesis method. Deller et al teaches that the CELP synthesizer consists of long term predictor and short-term predictor and the output of the codebook is scaled by a gain and sent to the predictors. Deller et al does not specifically teach multiple codebooks or a

selection procedure for selecting one of a multiple of codebooks for encoding/decoding a signal block. However, implementation of multiple codebooks and means for selecting one of the plurality of codebooks was well known in the art.

In a similar field of endeavor, McCree discloses a system and method for switched predictive quantization. Specifically, McCree teaches the implementation of multiple sets of fixed algebraic codebooks in the system, selecting a codebook based on a deterministic selection procedure that is independent of the signal type and performs encoding and decoding of a particular frame (col. 4, lines 7-52). McCree teaches that the use of multiple codebook pairs results in a significant performance improvement over single codebooks (col. 4, lines 3-4).

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the CELP system of Deller et al, to implement multiple codebook pairs and selection of a codebook based on a deterministic selection procedure as suggested by McCree, for the purpose of improved system performance, as suggested by McCree.

Deller and McCree do not specifically teach that multiple excitation codebooks. However, implementation of multiple excitation codebooks was well known in the art.

In a similar field of endeavor, Ubale discloses a method and apparatus for efficient multiband CELP wideband speech and music coding and decoding. Specifically, at col. 6, lines 20-28 Ubale discloses implementation of multiple excitation codebooks in the CELP encoder, and specifically suggests that use of more than one excitation codebook results in better speech and music quality.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the CELP encoding teachings of Deller to implement multiple excitation codebooks as taught by Ubale, for the purpose of achieving better audio quality from the encoder.

5. Regarding claims 6-7, 15, 20, and 23, Deller et al discloses that the system performs an exhaustive search, which reads on the cyclically stepping through the sets of codebooks.

6. Regarding claims 10 and 11, Deller et al discloses that the CELP coder is used to process frames of speech (page 480).

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deller in view of McCree in view of Ubale, and further in view of Heidari et al (US Patent No. 6,055,496).

8. Regarding claims 4 and 5, Deller, McCree, and Ubale teach everything as claimed in claim 3. Deller, McCree, and Ubale do not specifically teach of channel-protected parameters with error detection. However, implementation of channel-protected parameters was well known.

In a similar field of endeavor, Heidari teaches a CELP speech coder to improve overall system capacity (col. 2, lines 47-49, which implements channel coding that provides error protection (col. 2, lines 64-66).

Therefore, it would have been obvious to one of ordinary skill at the time of invention to modify the CELP coding system of Deller and implement channel coding which provides error protection, as taught by Heidari et al, for the purpose of improving overall system capacity, as suggested by Heidari et al.

9. Claims 16, 21, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deller in view of McCree in view of Ubale, and further in view of Adoul (US Patent No. 5,754,976).

10. Regarding claims 16, 21, and 24, Deller, McCree, and Ubale teach everything as claimed in claims 12-14, 19, and 22. .Deller, McCree and Ubale do not specifically teach the codebook selector pseudo-randomly steps through the codebook identification. However, randomly selecting codebook for speech coding was well known in the art.

In a similar field of endeavor, Adoul teaches a system and method for fast coding of speech. Specifically, at col. 14, line 27 continuing to col. 15, line 7, Adoul teaches that the search complexity is drastically reduced by restraining the subset of code vectors being searched to code vectors of which a certain number of non-zero amplitude pulses meet a pre-determined criteria, which reads on "pseudo-random stepping or selection", since the pre-determined criteria changes, the set of code vectors which meet the criteria will change, and thus the selection is pseudo-random.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the coding system of Deller to implement pseudo random codebook selection as suggested by Adoul, for the purpose of drastically reducing search complexity, as also taught by Adoul at col. 14, lines 19-21 and lines 65-67.

11. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minde et al (US Patent No. 5,991,717) in view of McCree and further in view of Ubale et al (US Patent No. 5,778,335).

12. Regarding claim 25, Minde et al discloses an analysis-by-synthesis linear predictive speech coder with restricted position multipulse excitation. Specifically, at Figure 6a and col. 5, line 63-col. 6, line 18, Minde et al, teaches a codebook with different allowed pulse positions and zero pulse positions. Minde et al does not specifically teach multiple codebooks or that each codebook has different zero pulse positions. However, implementation of multiple codebooks was well known in the art.

In a similar field of endeavor, McCree discloses a system and method for switched predictive quantization. Specifically, McCree teaches the implementation of multiple sets of fixed algebraic codebooks in the system, selecting a codebook based on a deterministic selection procedure that is independent of the signal type and performs encoding and decoding of a particular frame (col. 4, lines 7-52). McCree teaches that the use of multiple codebook pairs results in a significant performance improvement over single codebooks (col. 4, lines 3-4).

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the analysis by synthesis linear predictive speech coder of Minde et al, to implement multiple codebook pairs at suggested by McCree, for the purpose of improved system performance, as suggested by McCree.

Minde and McCree do not specifically teach that multiple excitation codebooks. However, implementation of multiple excitation codebooks was well known in the art.

In a similar field of endeavor, Ubale discloses a method and apparatus for efficient multiband CELP wideband speech and music coding and decoding. Specifically, at col. 6, lines 20-28 Ubale discloses implementation of multiple excitation codebooks in the CELP encoder,

and specifically suggests that use of more than one excitation codebook results in better speech and music quality.

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the CELP encoding teachings of Minde to implement multiple excitation codebooks as taught by Ubale, for the purpose of achieving better audio quality from the encoder.

Response to Arguments

13. Applicant's arguments with respect to claims 16, 21, and 24 have been considered but are moot in view of the new ground(s) of rejection.

14. Applicant's arguments filed January 29, 2003, with respect to claims 1-15, 17-20, 22-23 and 25 have been fully considered but they are not persuasive.

Applicant argues the cited combination of references fail to render obvious each of independent claims 1, 12, 19, and 22 because the cited combination fails to render obvious the feature of selecting for each signal block, a corresponding excitation codebook identification from a pre-determined signal block independent sequence of codebook identifications. The Examiner disagrees and argues McCree teaches the implementation of multiple sets of fixed algebraic codebooks in the system, selecting a codebook based on a deterministic selection procedure that is independent of the signal type and performs encoding and decoding of a particular frame (col. 4, lines 7-52). Thus, since the system selects the codebook based on a procedure that is independent of the signal type, the system is selecting the codebook that is signal block independent.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 703-308-6258. The examiner can normally be reached on Monday-Thursday 7:30-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (703) 305-4379. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

Angela A. Armstrong
Examiner
Art Unit 2654

AAA
April 3, 2003

Marsha D Banks-Harold
MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
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